Meridian 1

Property Management System Interface

Description

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Feature description

Reference list

The following are the references in this section:

- *X11 Features and Services (553-3001-306)*

This document provides feature, message control, and installation and configuration information for the Property Management System Interface (PMSI).

The Property Management System Interface is an optional software package (package 103) that allows the Meridian 1 to interface directly with a customer-provided Property Management System (PMS) through a serial data interface (SDI) port. This provides an effective means of information between the PMS and the Meridian 1.

> ***Note:*** A PMS typically consists of a computer, terminal(s), and software to perform billing and property management functions within the hotel/motel environment.

Both the PMS and the Meridian 1 have independent copies of the database; so, whenever the Meridian 1 updates its database, the PMS must be informed in order to keep both databases current.

Commands may be entered from a PMS associated with a terminal, a background terminal, or a telephone. If you issue a command from a telephone or a background terminal, the Meridian 1 will update its database and the new status will be sent to the PMS. However, if a command is entered from the PMS terminal, this command will be sent to the Meridian 1 and the Meridian 1 will update its database accordingly.

To ensure that all your commands are received correctly, issue only single-room DN commands at one time. Room cleaning status changes initiated by the cleaning staff from guest room telephones are provided to the PMS from the Meridian 1. These changes are initiated by Off Hook Detection, Dial Access, using a Room Status key (RMK), or by direct entry from the Background Terminal (BGD).

The Background Terminal (BGD) and Meridian Hospitality Voice Services (MHVS) interact closely with the PMSI. These features are described briefly in the following sections.

Background Terminal

The Background Terminal (BGD) facilities allow the hotel administration staff to enter, retrieve, and modify data that is associated with Automatic Wake Up Service, Message Registration, and Room Status on the Meridian 1 system. As with PMS, the BGD is connected to the Meridian 1 via an SDI port, and, in many cases, both the BGD and PMSI link are configured into the Meridian 1 system. This means that, for example, when a craftsperson enters a Check In command from a BGD terminal, an updated Room Status message will be displayed on the BGD and will also be transmitted to the PMS. For more information on the BGD, refer to *Background Terminal Facility description*.

Meridian Hospitality Voice Services

The Meridian Hospitality Voice Services (MHVS) consists of the Meridian 1 and the Meridian Mail Server (MMS). It uses the PMSI link (link between the PMS system and the Meridian 1) to automate processes, such as setting up mailboxes for hotel guests and creating group distribution lists. For example, a Check In message sent from the PMS will be used to set up a hotel guest's voice mailbox with a default greeting and new password.

The MMS is located between the Meridian 1 and the PMS in an MHVS system, and any command that is transmitted by the PMS is always intercepted and filtered by the MMS. Similarly, whenever a status message is sent by the Meridian 1, this message will always pass through the MMS first, before it is passed to the PMS. For more information on MHVS, refer to the module "Meridian Hospitality Voice Services" in *X11 Features and Services (553-3001-306).*

PMSI and Meridian 1 messages

Reference list

The following are the references in this section:

- *X11 Features and Services (553-3001-306)*
- *X11 Administration (553-3001-311)*

The types of messages that are sent from the PMS to the Meridian 1 and from the Meridian 1 to the PMS are described below.

Types of messages

The types of messages that are sent from the PMS to the Meridian 1 are

— Temporary DID Assignment commands

— Temporary DID Cancellation commands

— Temporary Multiple DID Assignment commands

— Temporary Multiple DID Cancellation commands

— Check In/Check Out commands

— Activating/Deactivating Telephone Restriction commands

— Activating/Deactivating Message Waiting lamp commands

— Activating/Deactivating Do Not Disturb feature commands

— Call Party Name Display commands

— Multiple Language Wake Up commands

The types of messages that are sent from the Meridian 1 to the PMS are

— Cleaning-status changes as dialed by maids from hotel guest rooms

- Cleaning-status changes as entered on background terminals or special telephones (maid-inspector update)
- Cleaning-status changes that are caused by automatic update commands that could be programmed on the Meridian 1
- Call Number Information Messages
- Error messages that are caused by invalid PMS commands
- Polling messages (with X11 Release 19 and later)

PMS messages sent to the Meridian 1

Flexible Direct Inward Dialing messages

Flexible Direct Inward Dialing (FDID) allows hotels to temporarily assign a DN to a guest room by using a Background Terminal (BGD) or the Property Management System (PMS). FDID allows the Meridian 1 to assign and cancel the temporary room DN's.

Flexible Direct Inward Dialing (FDID) contains the following list of messages sent by the PMS to the Meridian 1:

DID Assignment Message:
SE ST <room DN> FD <did DN>
where SE = SEt, ST = STatus, FD <did DN> =
DID Assignment message.

DID Cancellation Message:
SE ST <room DN> FD X
where SE = SEt, ST = STatus, <room DN> = A single room DN,
FD X = DID Cancellation message.

Multiple DID Assignment Message:
SE ST <room DN1> <room DN2> FD X
where SE = SEt, ST = STatus, <room DN1> <room DN2> =
A range of room DNs, FD X = DID Cancellation.

Multiple DID Cancellation commands
SE ST AL FD X
where SE = SEt, ST = STatus, AL = AL1 room DNs, FD X =
DID Cancellation.

Note: An unassigned DID DN trunk call is directed to the Attendant DN.

Room Status messages

Table 1 contains a list of messages formatted and sent by the PMS to the Meridian 1. Each message is expected to have the appropriate protocol appended.

If the Directory Number Expansion Package (DNXP) is equipped, a Directory Number (DN)–related field in a Room Status command and response is expanded to accommodate up to 7 digits. X11 Release 17 adds VIP status and Maid ID to the SE command. Maid ID introduces the MI keyword and a 1- to 4-digit Maid Identification Number. The MI keyword, with the Maid ID, can be appended to a cleaning status command if the Maid ID package is equipped.

Table 1
Room status commands (Part 1 of 2)

SEt	STatus	DN	CHeck (IN)
SEt	STatus	DN	CHeck OUt
SEt	STatus	DN	OCcupied
SEt	STatus	DN	VAcant
SEt	STatus	DN	SAle
SEt	STatus	DN	NS (Not for Sale)
SEt	STatus	DN	REquest (cleaning)
SEt	STatus	DN	PRogress (cleaning in)
SEt	STatus	DN	CLeaned
SEt	STatus	DN	PAssed
SEt	STatus	DN	FAiled
SEt	STatus	DN	SKipped

Table 1
Room status commands (Part 2 of 2)

SEt	STatus	DN	COntrolled (ON)
SEt	STatus	DN	COntrolled OFf
SEt	STatus	DN	COntrolled (ON)/OFf
SEt	STatus	DN	E1 (ON)/OFf
SEt	STatus	DN	E2 (ON)/OFf
SEt	STatus	DN	REquest MI nnnn
SEt	STatus	DN	VIp(ON)/OFf
SEt	STatus	DN	LA O
SEt	STatus	DN	LA EN

Note: DN represents the Room Directory Number. Uppercase letters are the minimum input required to execute the command.

Message Waiting and Do Not Disturb status

The telephone-set Message Waiting lamp is normally controlled by the Message Center attendant. Do Not Disturb (DND) is controlled from an Attendant Console. With PMSI enabled, it is possible to turn these lamp conditions ON or OFF using the PMS computer.

At the physical link layer, the PMS computer functions as a TTY and is connected to the switch by means of a switch serial data interface (SDI) port. In the switch, each character received from the PMSI data link is treated as if it were entered from a TTY, and each character transmitted to the PMS computer is handled the same way as character output to a TTY.

The command processor interprets only the first two letters of each command word typed in. These letters are shown in uppercase, while the rest of the commands, including input parameters, are shown in lowercase. Parentheses indicate a keyword that is optional (or a variable that is a default).

The exact commands listed here are expected to have the appropriate protocol appended.

Message Waiting:
SEt STatus DN MW (ON)
SEt STatus DN MW OFf

Do Not Disturb:
SEt STatus DN DNd (ON)
SEt STatus DN DNd OFf

For PMSI, all new and existing commands are supported as of X11 Release 17. In addition, the new parameter (X11 Release 16 software), LAnguage, added to the OPtion, STatus, and CPnd commands, are also recognized by the PMSI.

Note: Only single Room Status commands should be sent from the PMS to the Meridian 1.

Automatic control

The PMS can request the system to automatically change the room status of all occupied rooms to "REquested" every day at a specific time by sending the following message where "hour1" is the time in 24-hour format:

SEt OPtion TIme REquested hour1

To cancel the automatic status change, the following message is sent:

SEt OPtion TIme REquest OFf

Off Hook Detection

The PMS can specify a time when the cleaning staff can use the room phone to signal that the room has been cleaned. The room phone handset is lifted and left off hook to signal "cleaning in PRogress." When the handset is replaced, cleaning status is updated to "CLeaned."

X11 Release 17 introduces Maid Identification. Off Hook Detection sends the default Maid ID number of zero (o) to the PMS if the Maid ID package is equipped. See *X11 Features and Services (553-3001-306).*

The option is set using the following command, where "t1" is the start time for the Off Hook Detection plan, and "t2" is the end time for the Off Hook Detection plan:

SEt OPtion TIme DEtect t1 t2

Note: End time (t2) must be greater than the start time (t1). If the end time is not entered, t2 defaults to midnight, 2400.

Dial Access

The Dial Access option is an enhancement of the Off Hook Detection method for updating RMS data, and expands the list of RMS commands to seven. To set the PMS for Dial Access, use the following command:

SEt OPtion TIme DIal (ON)

To disable Dial Access, use the next command:

SEt OPtion TIme DIal OFf

Dial Access is supported only by room phones with Controlled Class of Service Allowed (CCSA) and is limited to changing the status of its own room. Also, Dial Access requires the use of SPRE numbers that precede special access codes for RMS functions. Table 2 shows the necessary SPRE dialing commands.

Table 2
SPRE dialing commands

off hook	SPRE# 861	on hook (REquested)
off hook	SPRE# 862	on hook (in PRogress)
off hook	SPRE# 863	on hook (CLeaned)
off hook	SPRE# 864	on hook (PAssed)
off hook	SPRE# 865	on hook (FAiled)
off hook	SPRE# 866	on hook (SKipped)
off hook	SPRE# 867	on hook (No Sale)
off hook	SPRE# 86X*nnnn#	on hook (Status) Maid ID

Note 1: The X in 86X for Maid ID must be 1–7.

Note 2: The characters 8, 9, 0, #, and * are reserved for special functions and are not allowed as input for SPRE code commands.

Call Party Name Display name change

The PMS computer can change a Call Party Name Display (CPND) "name" associated with a given DN. To execute the change, use the following commands:

SEt CPnd dn "guest name" xpln LAnguage # room status

Legend

dn	=	station set DN
"guest name"	=	CPND name for the DN
xpln	=	Expected Name Length
#	=	language assignment for the room
room status	=	RMS coded indicator (checked in or out)

The CPND name must be enclosed in double quotes and *cannot* contain an asterisk (*), colon (:), or carriage return (<CR>). You must define the CPND data block in LD 95 before implementing the SEt CPnd command.

The first SEt CPND command defines the CPND name and the expected length. If the XPLN field is not specified, then it defaults to the actual size of the name string or the default length (DFLN) defined in LD 95, whichever is larger.

Refer to *X11 Features and Services (553-3001-306)* to configure and enable CPND.

Call Number Information messages

With X11 Release 12 and later, if the terminating telephone has Call Number Information Allowed (CNIA) class of service (CLS), the system sends Call Initiation and Call Disconnection messages for calling and called DNs on a real-time basis to the Background Terminal (BGD) and PMSI ports.

Class of service for CNIA is limited to 60 sets and is assigned in LD 10 and LD 11. Refer to Nortel Networks technical publication *X11 Features and Services (553-3001-306)* and *X11 Administration (553-3001-311)*.

> ***Note:*** A set that is assigned Virtual ACD Agent (VMA) class of service *cannot* be assigned CNIA class of service.

Message formats sent to the BGD port and PMSI ports are shown below, where "XXXX" is the calling DN, and "YYYY" is the called DN:

ST-CI XXXX YYYY

ST-CT XXXX YYYY

> ***Note:*** The calling or called DN can have up to 7 digits if equipped with the DNXP package.

When equipped with the DNXP package, the Originating DN and Terminating DN fields in Call Initiated and Call Terminated messages are expanded from 6 bytes to 7 bytes.

Call Initiated (CI) A Call Initiated message is sent when the terminating set has Call Number Information Allowed (CNIA) class of service (CLS) and one of the following conditions occurs:

— The telephone set goes off hook and a number is dialed.

— The call is reestablished from On-Hold status.

— The telephone set is the third party in a Call Transfer.

— The set terminates a Forwarded Call.

— The call is picked up by a station.

— The Call Waiting key on a CNIA set is pressed.

— The call is extended by an attendant.

Call Terminated (CT) A Call Terminated message is sent when the terminating set has Call Number Information Allowed (CNIA) class of service (CLS) and one of the following conditions occurs:

— Call termination to a non-CNIA set

— Call Forward No Answer (CFNA)

— Call Park

— Call Transfer from originating or terminating sets

— Call Pickup received by the set

— Conference call

— Call On Hold

No messages are sent for the following call types:

— Dial Intercom calls

— overridden calls

— attendant calls

— CNIA-originated calls

— Automatic Wake Up calls

— trunk calls

Meridian 1 messages sent to the PMS

Table 3 provides a list of Meridian 1 messages sent to the PMS.

Table 3
Meridian 1 messages sent to PMS

Message formats	Type of message
ST <dn> RE	Cleaning status (cleaning requested)
ST <dn> PR	Cleaning status (cleaning in progress)
ST <dn> CL	Cleaning status (room cleaned)
ST <dn> PA	Cleaning status (passed inspection)
ST <dn> FA	Cleaning status (failed inspection)
ST <dn> SK	Cleaning status (cleaning skipped)
ST <dn> NS	Cleaning status (note for sale)
ST-CI <dn1> <dn2>	Call initiation
ST-CT <dn1> <dn2>	Call termination
ST PO (X11 r19 and later)	Polling message

Message control and protocols

The envelope used for messages between the Meridian 1 and the PMS is ASCII-encoded control characters listed in Table 4 (<STX>, <ETX> <ACK>, and <NAK>). In addition, each message block is terminated with a <BCC> character. The <BCC> is used to maintain message integrity and is an "exclusive or" of all bytes following the <STX>, including the <ETX>.

The general message format is listed below:

STX (message body) ETX BCC

The <BCC> follows the <ETX> character in the transmission, and the receiver immediately verifies the message. If the <BCC> is correct, the receiver responds with an <ACK>. If the <BCC> does not match, the receiver responds with <NAK>.

Table 4
Message control and special characters

Character	Hex code	Definition
STX	02	Start of Text: Message body follows.
ETX	03	End of Text: End of message body.
BCC		Block Check Character
ACK	06	ACKnowledge: Affirmative response from the receiver to the sender. If BCC is used, ACK also indicates BCC check matches.
NAK	15	Not Acknowledged: Negative response from the receiver to the sender of a block of data received with errors; requires retransmission.

Message protocols

Software protocols have been implemented to supply a method of flow control across the data link. The PMS computer is given priority, and the responsibilities of the system and the PMS have been defined.

Meridian 1 protocol

The following sections list the transmitting and receiving requirements for the Meridian 1 protocol:

Transmitting requirements

— The Meridian 1 must calculate a <BCC> for each message, and transmit it as a terminating character.

— Prior to X11 Release 19, when the Meridian 1 transmitted a message to the PMS, it would ignore any <ACK> or <NAK> received from the PMS and would not attempt to retransmit the message. Instead, the Meridian 1 could transmit a new message to the PMS immediately following the previous message, without any gap in transmission.

With X11 Release 19 and later, when the Meridian 1 transmits a message to the PMS, it no longer ignores an <ACK> or <NAK> received from the PMS, but waits for a specified interval (defined on a system basis) for the PMS to respond before sending the next message.

Receiving requirements

— When the Meridian 1 receives a message from the PMS, a <BCC> for the received characters following the <STX> and including the <ETX> will be calculated and compared with the received <BCC>. If the BCCs match, an <ACK> is sent to the PMS. If the BCCs do not match, a <NAK> is sent to the PMS.

The <ACK> or <NAK>, sent back to the PMS, will follow any message that is currently being transmitted by the Meridian 1, such as a room cleaning status message.

PMS protocol

The PMS can operate using three slightly different protocols:

— PMS1
The first PMS protocol is the standard interface and default value.

— Format 2 (Format B)
The second protocol allowed requires a carriage return (<CR>) to recognize the input message.

— Format 3 (Format C)
The third protocol allows for any updated RMS message sent to be followed by the old room status whenever a room DN checks in or checks out.

Within all three types, it is recommended that the PMS adhere to the following protocol requirements:

Transmitting requirements

— The PMS must calculate a <BCC> for each message and transmit it as a terminating character.

All messages transmitted by the PMS should be "single room" commands. The PMS may run into timing and flow-control problems if you use "multiple" room commands.

— After transmitting a message, the PMS must wait for the Meridian 1 to acknowledge receipt of the message within a predefined period of time.

The recommended period of time for the message acknowledgment timer is 2 seconds.

If the PMS receives an <ACK> from the Meridian 1 before the acknowledgment timer expires, the PMS can transmit the next message immediately. That is, the PMS does not have to wait for the acknowledgment timer to expire before transmitting the next message.

If the PMS receives a <NAK> from the Meridian 1 before the acknowledgment timer expires, the PMS can retransmit the same message immediately. That is, the PMS does not have to wait for the acknowledgment timer to expire before retransmitting the next message.

After three retransmission attempts, however, the PMS should take the following actions:

- Flag the problem to hotel personnel so that the usual corrective action can be taken.

Note: The usual corrective action for most problems would involve the determination of the exact cause of failure, the correction of the problem, and a database swap to resynchronize the system.

- Store the message in an error file, and then send the next message.

— **If the PMS does not receive an <ACK> or <NAK>** from the Meridian 1 before the acknowledgment timer expires, the PMS should assume that the message was lost and should retransmit the same message. The PMS should continue to retransmit the same message until the Meridian 1 acknowledges receipt of that message.

The PMS should queue all other messages for the Meridian 1. If the PMS queue fills up, messages may be lost and a database swap will be required to recover the lost messages. If PMSI messages are lost, the PMS should flag the problem for the hotel personnel.

Note: Some vendors using the PMS protocol may want to follow an earlier strategy of allowing only three transmission attempts, after which the message is stored in a PMS error file and the next message is transmitted. The new strategy described above is designed to facilitate recovery from short-link outages.

— The PMS should send an <ACK> or <NAK> upon receiving a message from the Meridian 1.

Prior to X11 Release 19, it was not necessary to send these characters in response to PMSI messages, because the Meridian 1 did not retransmit a <NAK> message and did not wait for a response before transmitting the next message.

With X11 Release 19 and later, it is strongly recommended that the PMS send <ACK> and <NAK> responses, because the Meridian 1 now has the capability to retransmit messages.

In addition to message retransmission, X11 Release 19 introduces a polling functionality to test the status of the PMSI link. The polling message may not be recognized by the PMS. However, it is strongly recommended that the PMS treat the polling message as a standard Meridian 1 message by responding with an <ACK> upon receiving the message in its correct form.

Note: It is required that <ACK> and <NAK> characters be sent only between message packets. That is, if the PMS is in the middle of sending a message to the Meridian 1, it must finish sending the complete message before sending an <ACK> or <NAK> back to the Meridian 1.

Receiving requirements

— When the PMS receives a message from the Meridian 1, it is recommended that the <BCC> of the messages received be checked internally by the PMS and an <ACK> or <NAK> be sent back to the Meridian 1.

— It is recommended that any error detected be stored in an error file.

Note: The PMS must not send any error response to the Meridian 1 about a received message, such as "Invalid command" or "Syntax error".

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Meridian 1

Property Management System Interface

Description

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